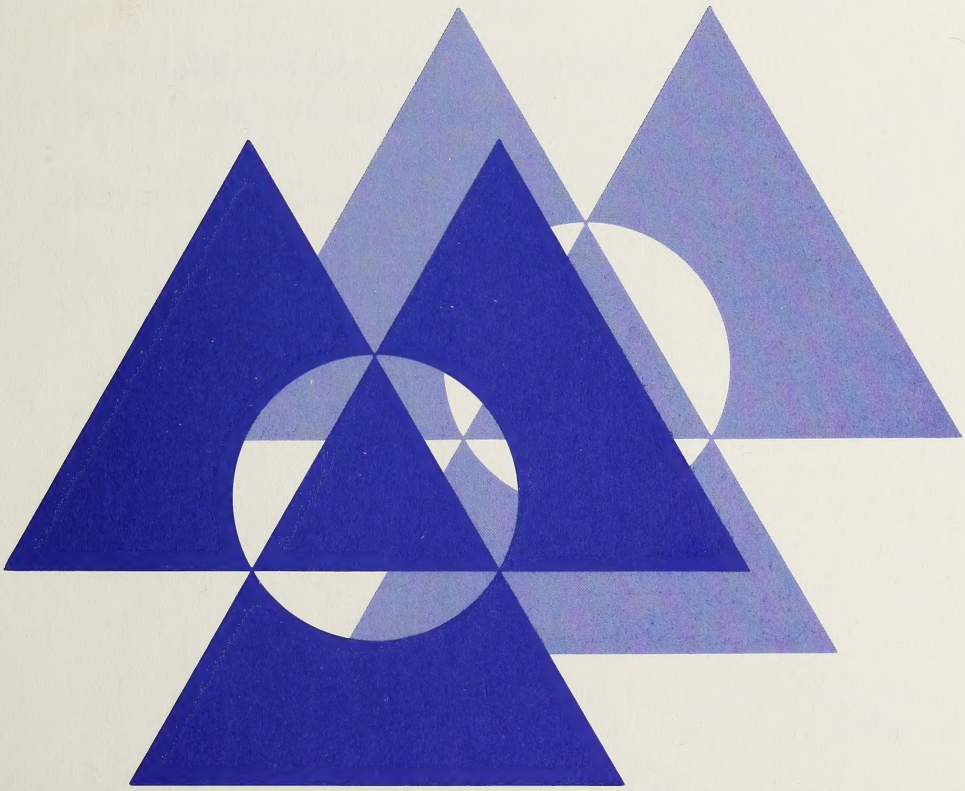
IMPROVING ENFORCEMENT
of The Clean Air Act and the Clean Water Act



Alberta
Environment Council of Alberta

IMPROVING ENFORCEMENT
of The Clean Air Act and the Clean Water Act

John Lilley, Senior Research Officer
Brian Free, Research Officer

Environment Council of Alberta

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Copies of this document may be obtained upon request to:

Environment Council of Alberta
8th Floor Weber Centre
5555 Calgary Trail Southbound NW
Edmonton, Alberta
T6H 5P9
Telephone (403) 427-5792

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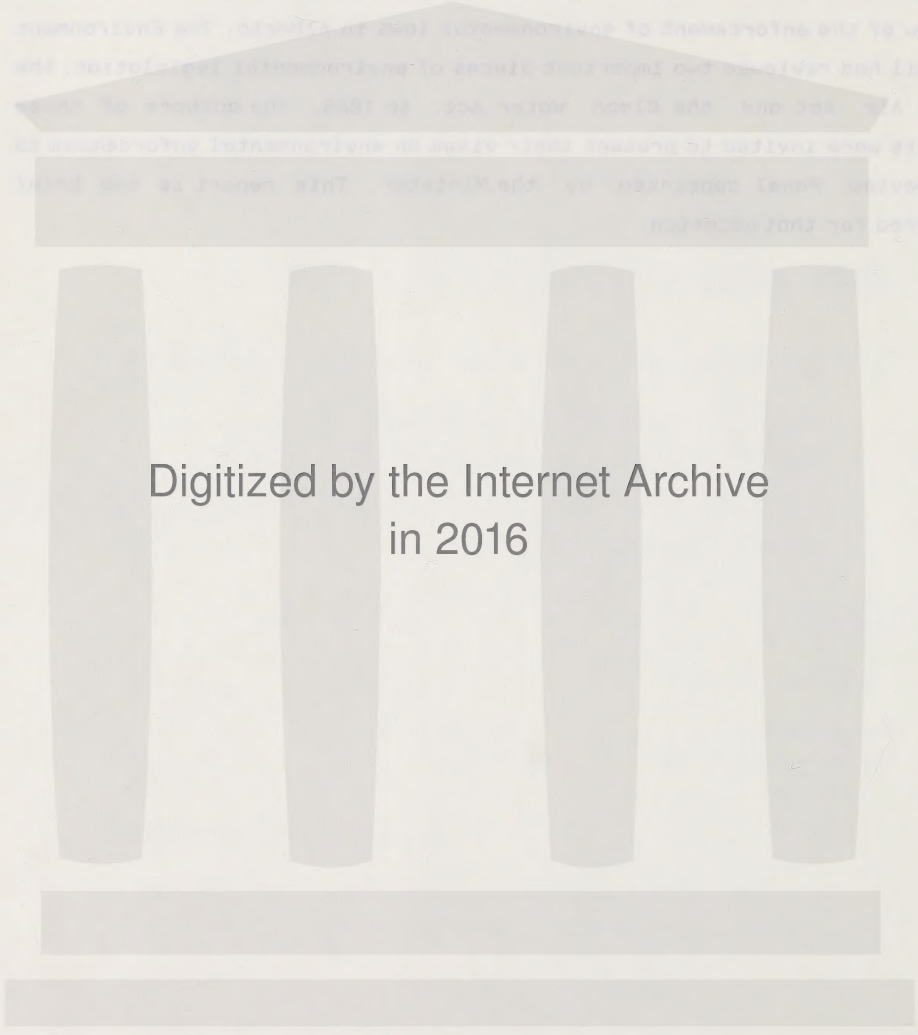
FOREWORD

In June, 1987, the Hon. Ken Kowalski, Minister of Environment, initiated a review of the enforcement of environmental laws in Alberta. The Environment Council had reviewed two important pieces of environmental legislation, the Clean Air Act and the Clean Water Act, in 1985. The authors of these reports were invited to present their views on environmental enforcement to the Review Panel appointed by the Minister. This report is the brief prepared for that occasion.



CONTENTS

FIGURES

BACKGROUND

The Environment Council of Alberta (ECA) is a crown corporation with a mandate defined by the Environment Council Act. Among other duties, this mandate requires the Council to conduct a continuing review of policies and programs pertaining to environment conservation, and to hold public hearings at the request of the Lieutenant Governor in Council. The Council may also investigate, at the request of the Minister of Environment, any matter pertaining to environment conservation and make a report to the Minister.

During the Environment Council's public hearings on hazardous waste management in Alberta (198Ø), about 55 percent of the presentors expressed concerns about the government's credibility in the environmental regulatory field. The presentors were both of the opinion that the present regulations were inadequate and convinced that environmental enforcement procedures were inadequate.[1]

These views were supported by the results of a survey conducted in 198Ø for the Council.[2] This survey found that Alberta residents, generally speaking, felt that neither environmental regulations in the province nor their enforcement were tough enough. The majority of Albertans (67%) in 198Ø believed that greater emphasis on environmental protection was needed, although this might have meant spending more money. These concerns and the comments received through the public hearings on hazardous waste management resulted in several recommendations which are related to this Review Panel's terms of reference. Discussion about them can be found on pages 162-164 and pages 183-186 of the ECA's Report and Recommendations on Hazardous Waste Management in Alberta.

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[1] Environment Council of Alberta. 198Ø. Public Hearings on Hazardous Waste Management in Alberta: Report and Recommendations. See page 157.

[2] MIR Information Research Ltd. 1981. Public Perceptions of the Environment in Alberta. Available from the Environment Council Library.

The findings of the MIR survey were supported by a review of six surveys published by the Environment Council in 1982[3]. The results of the six surveys were fairly consistent in that a moderate degree of dissatisfaction with government performance was expressed, but none of the surveys indicated a widespread attitude of directing all the blame for environmental problems toward government; indeed, the average citizen absorbs much of the abuse.

In the context of this background of public concern and interest in environmental protection, the Minister of Environment asked the ECA to review the Clean Air and Clean Water Acts and their roles in the management of air and water quality in Alberta. The ECA's reports (each consisting of two parts, a staff review and the report of the Environment Council to the Minister) were published in March, 1985. The following comments and suggestions arise primarily from the staff reviews of the Acts. Some additional comments relate to this Review Panel's Terms of Reference.

THE CLEAN AIR ACT

A GOAL FOR AIR QUALITY MANAGEMENT

For any management program, it is very important that a clear goal be in place. This principle applies to the management of our natural resources, in this case, air quality. A clear goal is important for the entire air quality management program, including enforcement, which is the main focus of the Review Panel. It should provide the basis for setting the ambient objectives that define the air quality Albertans desire. An overall goal also gives direction for the administrative judgements that are made when issuing licences, determining monitoring requirements, and deciding which enforcement measures should be used.

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[3]Kelly, M. 1982. Attitudes Toward The Environment: A Comparison of Six Surveys Spanning Six Years. Available from the Environment Council Library.

The Minister of Environment has indicated that his Department will strive to protect and improve the quality of our environment. Although this gives general direction for all Department programs, each program needs a more specific goal. Currently, there is no explicit goal for air quality management and this reduces the effectiveness of the Clean Air Act.

A goal for air quality management should reflect the needs and desires of all Albertans. Public input is important and will add credibility and support to the air quality management program. This goal may reflect a desire to protect the health of the general population and sensitive individuals as well. Albertans may also want to protect other aspects of our environment, such as animals, vegetation, or soils.

DEVELOPING A GOAL FOR AIR QUALITY MANAGEMENT SHOULD BE A PRIORITY.

AMBIENT OBJECTIVES

Based on the goal for air quality management, those air contaminants that require control and management can be determined. Objectives can be set for these contaminants in the ambient air according to available scientific studies and judgements about acceptability of risk, public acceptance of environmental degradation, and so on. Public input is desirable in setting ambient objectives because of these latter subjective judgements.

The Clean Air Act gives the Minister the authority to establish maximum permissible concentrations of air contaminants. This has been done in the Clean Air (Maximum Levels) Regulations for several contaminants. These concentration limits for the ambient air are unenforceable -- it is not an offense to exceed these levels. However, by placing them in a regulation and calling them "maximum permissible concentrations", an expectation is created in the public mind that some sort of punitive action is called for should they be exceeded. When no enforcement action is taken, the Department's reputation suffers. It may be more appropriate to call them

objectives and publish them as official guidelines. This would not affect their present use, but would better reflect their role in air quality management.

CONSIDERATION SHOULD BE GIVEN TO ESTABLISHING AMBIENT AIR QUALITY OBJECTIVES AS GUIDELINES RATHER THAN MAXIMUM PERMISSIBLE CONCENTRATIONS IN REGULATIONS.

PLUME DISPERSION MODEL

Facilities that are subject to licensing require a Permit to Construct. This permit requires that the facility be designed to meet the ambient objectives in the Clean Air (Maximum Levels) Regulations. A computer model, the plume dispersion model, is used to relate the emissions from the facility to the ground-level concentrations. Factors such as local topography and wind patterns are considered. The height of the emissions stack is then designed to adequately disperse the contaminants and maintain acceptable ground-level concentrations.

The reliance on plume dispersion to maintain air quality is based upon the Department's concept of the assimilative capacity of the environment. In our review of the Clean Air Act, we point out that the assimilative capacity of the atmosphere is very limited and diffusion is the primary mechanism for reducing the concentration of air contaminants. The magnitude of environmental effects is reduced, but the contaminants are more widely distributed. The long-term consequence of this approach is a uniform deterioration of environmental quality. Reliance on assimilative capacity for waste disposal brings into question the Department's policy of controlling pollution at its source.

THE FOCUS OF THE DEPARTMENT SHOULD BE ON PROTECTING THE ENVIRONMENT BY MINIMIZING THE RELEASE OF CONTAMINANTS FROM INDUSTRIAL FACILITIES RATHER THAN SIMPLY REGULATING THE UTILIZATION OF THE ENVIRONMENT'S "ASSIMILATIVE CAPACITY" FOR WASTE DISPOSAL.

EMISSION STANDARDS

Most emission standards are based on best practicable technology, although a few are based on best available technology. Government/industry task forces determine which technologies qualify and the emission limits that can be met with these technologies. A problem with technology-based standards is that there is no incentive to reduce pollution beyond the existing requirements. If the overall goal of the air quality management program is to protect or improve environmental quality, then some form of incentive to improve pollution control is desirable.

There are a variety of regulations and guidelines for air contaminant emissions, both federal and provincial. Under the provincial Clean Air Act, the Minister can establish industrial emission standards. In the Clean Air (Maximum Levels) Regulations, there are emission standards for visible emissions and particulates for all stationary sources (with exceptions). It is an offense to exceed these standards. As well, there are emission standards in these regulations for secondary lead smelters and polyvinyl and vinyl chloride plants. Emissions from these two industries are also subject to federal legislation and it is an offense under federal regulations to exceed these provincial standards.

The Department of Environment has also established emission guidelines for certain industrial facilities such as fertilizer plants, asphalt plants, and thermal power plants. These guidelines are not directly enforceable, but become enforceable if they are incorporated into operating licences.

Clarification of the types of emission limits that should be in regulations and those that should be in guidelines would be useful. For example, the regulations could be used for general prohibitions that apply to all sources, with guidelines reserved for specific industries or types of facilities. The guidelines would be incorporated into individual licences and made legally enforceable.

In Section 5 of the Clean Air (General) Regulations, there is a general prohibition of the unauthorized emission of toxic air contaminants. This

could be a useful provision for legal action in the event of a single episode of harmful emissions, provided that operating licences are written in a way that does not leave a loophole for licensed facilities.

LICENSING

The current system of permits and licences is generally good. However, the scope and nature of the licensed emissions need further consideration.

Normal Operating Level

Emission standards for normal operating conditions should be included in the operating licence, as is currently done. These emission levels would be based upon the technology determined to be most appropriate (for example, best practicable or best available).

Allowable Variance

In order to accommodate normal variation in the operation of control technology, an allowable variance is appropriate. A facility would be permitted to exceed the normal operating levels with clear restrictions on the frequency, duration, or magnitude of these excursions. This allowable variance would not exempt start-ups, shut-downs, and malfunctions per se, but would be designed to accommodate the normal, acceptable regime for these occurrences. Exceeding the allowable variance would be a violation of a licence condition and subject to prosecution.

This allowable variance could be worded in several ways. For example, a certain number of excursions or a certain percentage of monitoring readings over the normal operating level could be acceptable. This concept of allowable variance is not entirely new to the Department's current system. It is found in the Clean Air (Maximum Levels) Regulations. In Section 10, Subsection 2, visible emissions may exceed the normal standard in certain instances, but there is a restriction on the duration of the excursion. Similarly, in Section 12.2 concerning secondary lead smelters, excursions

over the standards for particulates and lead may be exceeded for a limited period of time.

Maximum Emission Limit

For each licensed contaminant there should be a maximum emission limit. This limit should be related to the goal of air quality management and should be set at a level above which concentrations are clearly unacceptable. This limit should be equal to or less than any general prohibition in the regulations to ensure that licensed facilities are still subject to that general emission standard. Excursions above this level would automatically be subject to strong enforcement action and absolute liability should apply.

OPERATING LICENCES SHOULD INCORPORATE THE CONCEPTS OF ALLOWABLE VARIANCE AND ABSOLUTE MAXIMUM EMISSION LIMITS.

Economic Incentives

Although not necessary for this proposed licensing strategy, it would be beneficial to incorporate some sort of incentives for improving pollution control beyond existing requirements. With emission standards based upon technology rather than environmental quality, there is no incentive to improve pollution control. Economic incentives could be incorporated into the licensing system to encourage improved performance. For example, excursions over the normal operation limits, although permitted with the restrictions described above, could be subject to emission charges, a reduction in tax credits, and so on. This type of encouragement would be justified in view of the Department's mandate to protect and improve the quality of the environment.

Certificates of Variance

Certificates of variance are used to alter permit or licence conditions or a provision in a regulation when certain conditions exist. This discretionary

instrument provides needed flexibility to the regulatory system. Some mechanism to accommodate unforeseen circumstances or acceptable, temporary deviations from licence conditions is needed.

These certificates must not become letters of convenience for licensed facilities. This is achieved in part by having them issued by the Minister rather than a government bureaucrat. They should be issued judiciously based upon clearly established criteria. Under the current Act, the Minister may issue these certificates if the anticipated contravention is beyond the control of the operator; the pollution will not threaten life, health, or property; and refusal to grant a certificate would result in serious hardship for the operator without significant benefit to others. These criteria should be modified to include consideration for environmental quality and not just life, health, and property.

THE CRITERIA FOR ISSUING CERTIFICATES OF VARIANCE SHOULD BE MODIFIED TO EXPLICITLY INCLUDE CONSIDERATION OF ENVIRONMENTAL QUALITY.

MONITORING

It is appropriate that industry be required to submit monitoring information. Environmental monitoring should be a cost of their operation. Company monitoring data should be used for identifying problems and initiating administrative actions, such as issuing directives and control orders. The quality of the data is very important.

The government's quality assurance program is very important in establishing the credibility of company monitoring data. The Pollution Control Division has issued several Air Monitoring Directives outlining the detailed procedures that companies are expected to follow. A manual stack sampling code has been issued and a code for continuous monitoring was being developed when our review of the Clean Air Act was underway and is presumably completed. These monitoring procedures can be incorporated into operating licences and made enforceable. Other components of this quality assurance program include spot checks, witnessing annual stack sampling,

checking the calibration of monitoring equipment, and so on. This program may require considerable Department staff and budgetary resources, but it must be remembered that this is a lot cheaper than having the government do the monitoring. If the Department pays more attention to company monitoring, industry will respond with similar attention.

ASSURING THE QUALITY OF COMPANY MONITORING DATA SHOULD BE A PRIORITY OF THE POLLUTION CONTROL DIVISION.

ENFORCEMENT

The Clean Air Act provides several enforcement tools, including Directives, Emission Control Orders, and Stop Orders. These instruments are legally enforceable. Other offenses are identified in the legislation, including unauthorized emission of toxic air contaminants; exceeding certain emission standards; violating a condition of a permit, licence, or certificate of variance; failing to report an unauthorized release; and providing false information. The Department also uses written letters and meetings with the company staff as enforcement measures.

This array of measures should be adequate for the effective enforcement of the Clean Air Act. However, modifications are needed in the policies affecting enforcement decisions. The current enforcement policy favors negotiation over the more arbitrary methods provided in the Act and Regulations. This policy has attracted considerable public criticism. Because industry representatives are involved in selecting the appropriate control technology, setting emission standards, and negotiating licence conditions, a high rate of compliance should be expected and further negotiation at the enforcement stage is not warranted.

The administrative discretion associated with enforcement should be reduced. The incorporation of allowable variance in operating licences should reduce the need for administrative discretion. Excursions over the maximum emission limits would result in prosecution. However, some discretion will remain. For example, if emissions exceed the normal operating level more

than allowed in an operating licence, a decision must be made whether to prosecute or to issue a directive, an emission control order, or a stop order. A clear, overall goal for air quality management would be an important guide. A set of criteria already exists that is used by Department officials to determine which measure is appropriate when a contravention is detected (see page 45 of our Review of the Clean Air Act). The list is long and gives an official many reasons to be lenient. These criteria should be reviewed and tightened up to reflect the new direction of the Department.

THE CURRENT ENFORCEMENT CRITERIA SHOULD BE MODIFIED TO REFLECT THE DEPARTMENT'S NEW EMPHASIS ON STRICTER ENFORCEMENT AND ITS MANDATE TO PROTECT AND IMPROVE THE QUALITY OF THE ENVIRONMENT.

THE CLEAN WATER ACT

THE NEED FOR ENVIRONMENTAL PROTECTION GOALS

As part of the review of the Clean Water Act and its role in the management of water quality in Alberta, it was necessary to understand not only the legislation and the regulations as they are written, but also the Department of Environment's interpretation of the legislation, and its policies and programs which guide the implementation of the Act.

The Department has published water resources management principles, surface water quality objectives, various guidelines and recommended standards, and other reports related to the implementation of the Clean Water Act and its provisions.

One of the main findings of the Clean Water Act Review was that the "goals" of the Department of Environment with respect to water quality are not explicitly defined.

The lack of explicit goals has led to different views within the Department about what these goals are. These differences are evident in different attitudes and approaches toward water quality management.

On one hand, there are Surface Water Quality Objectives that "apply to all surface waters in Alberta" and allow the most sensitive use, while on the other hand basin-specific and reach-specific objectives are being developed based on the existing water quality and existing uses.

Calgary alone is required to have tertiary treatment to reduce phosphate loadings, even though total phosphorus levels downstream of Edmonton for 100 kilometers routinely exceed the province's water quality objectives. The water quality objectives being applied to the Beaver River basin in Northeastern Alberta are different from those applied anywhere else in the province. With these different water quality objectives, industrial and municipal growth, which otherwise might not have been feasible, may be accommodated.

What is the Department aiming to achieve through the Clean Water Act? What are the Province's goals for water quality management? These goals need to be clearly stated.

THE EFFECTIVENESS OF THE CLEAN WATER ACT COULD BE SUBSTANTIALLY ENHANCED BY THE ADDITION OF CLEARLY STATED GOALS FOR WATER QUALITY AND A STATEMENT OF POLICIES AND GUIDELINES TO PROVIDE DIRECTION FOR EFFORTS TOWARD THEM.

The public has a role to play in providing guidance with respect to the value judgements inherent in environmental protection. The water quality management goals should be a reflection of the desires of all Albertans. Public input during the development of these goals is essential. Consultation with other departments and agencies, such as the Energy Resources Conservation Board and Forestry, Lands and Wildlife, also will be necessary to ensure that the Department of Environment's goals and approach to water quality management are compatible with the responsibilities and interests of these agencies.

THE DEVELOPMENT OF WATER QUALITY MANAGEMENT GOALS SHOULD INCLUDE THE OPPORTUNITY FOR PUBLIC INPUT AS WELL AS COORDINATION WITH THE ENVIRONMENTAL PROTECTION ACTIVITIES OF OTHER DEPARTMENTS.

If Alberta's water quality management goals are explicitly stated and the supporting policies, implementation procedures, and anticipated results are clearly spelled out, then the implementation of the provisions of the Clean Water Act can be directed to attainment of those goals. An explicit statement of goals and policy would increase the awareness of the public and all water users of the Government's intentions in water quality management and provide a clear standard against which success in implementation and enforcement could be judged.

Regulations and licence conditions could be directed toward achieving the goals. Monitoring programs could be directed at evaluating the Department's success and identifying enforcement or regulatory requirements. Administrators and enforcement staff would have a clear context within which to undertake enforcement actions. Clear goals and policy would provide the necessary framework for decisions.

POLLUTION CONTROL ACTIVITIES WOULD HAVE MORE DIRECTION AND BE MORE EFFECTIVE IF THEY WERE LINKED WITH ACHIEVING STATED DEPARTMENTAL GOALS AND POLICIES WITH RESPECT TO WATER QUALITY MANAGEMENT.

THESE GOALS SHOULD INCLUDE A COMMITMENT TO MAINTAIN AT LEAST THE PRESENT QUALITY OF ALBERTA'S WATERS AND TO IMPROVE THE QUALITY OF THOSE WATERS THAT DO NOT MEET THE PROVINCE'S OBJECTIVES.

Goals such as these would be in keeping with the recognition by the Department that its mandate includes achieving the protection, improvement, and wise use of our environment now and in the future.

MAINTAINING ENVIRONMENTAL QUALITY VERSUS LICENSING POLLUTION

There are two fundamental approaches to management of water quality: protecting the resource or licensing allowable contamination. The present Clean Water Act, except for the "general prohibition" clause, is aimed at authorizing and regulating the release of substances to the environment, rather than protecting environmental quality by preventing additional

loadings of contaminants. This may appear to be a subtle difference, but it has a major influence on the approach taken in the administration and enforcement of the Act. Water quality management is not approached with the philosophy of "what steps can be taken to maintain or improve the water quality?" but rather "will this extra contamination cause a noticeable deterioration in water quality?"

THE DEPARTMENT'S APPROACH TO WATER QUALITY MANAGEMENT IS BASED ON WHAT TECHNOLOGY CAN ACHIEVE, NOT ON WHAT IS NECESSARY TO PROTECT THE ENVIRONMENT.

Effluent guidelines and recommended standards were developed based on pollution control capability. Licence conditions are set based on a facility's or industry's processes and the level of emission control that is practical. Licence conditions are industry specific and related to the treatment technology.

Implicit or explicit allowance is made for the inability of technology to be perfect and departmental officials do not expect 100% compliance. There is allowance for uncontrolled releases, controlled but unlicensed releases, and accidental spills. There is also provision for Certificates of Variance. This approach to controlling releases does not take into account, at least explicitly, the environmental impacts of releases, nor does it engender in the staff an attitude that a violation of a regulation or licence condition is a serious matter.

The technological approach is also apparent in the development and application of effluent guidelines. These guidelines have not been updated recently and, for the most part, recognize mainly "traditional" water quality parameters. But times have changed. Industrial activities, processes, and technology have changed. Our understanding of the impacts of many contaminants has increased dramatically and, along with that developing knowledge, society's concerns and expectations have increased.

Based on these changes, new guidelines seem warranted. Development of new guidelines has apparently been avoided in part because of the feeling that

the existing guidelines adequately protect water quality and that the existing water quality has not indicated the need for more stringent requirements. The approach is not to take preventative action and protect or improve the present quality of the resource, but to allow further additions of contaminants until deteriorating quality warrants an improved response. This attitude has contributed to the public perception that environmental legislation is neither strong enough nor strongly enough enforced. The public expectation is that the Act should be protecting Alberta's water quality and that every violation is a serious offense and should be treated as such.

The "licensing pollution" approach to water quality management is also evident in the continued misuse of the concept of assimilative capacity. The concept of assimilative capacity has its basis in classical assumptions and theories with respect to the ability of aquatic systems to purify themselves of those contaminants, such as organic materials, that use dissolved oxygen in their decay. The contaminants are "assimilated" and at some point downstream, in distance or in time, the water body returns to its fully oxygenated state.

Unfortunately, the concept of assimilative capacity has spilled over into the management of a variety of contaminants, to the extent that Alberta's Water Resource Management Principles state that the assimilative capacity of receiver streams is "a natural resource that is legitimate to use."[4] However, some contaminants, such as metals, are not assimilated but accumulate in the aquatic ecosystem and may have adverse impacts. Controlling the release of these contaminants on the basis of technological capability alone means the eventual deterioration of the environment. A different approach is required, one based on maintenance or enhancement of environmental quality.

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[4]Alberta Environment. No date. Water Resource Management Principles for Alberta. See page 12.

The assumption that a certain amount of contamination is acceptable is also reflected in water quality guidelines being developed by the Prairie Provinces Water Board. One option being considered is to define "assimilative capacity" as the difference between the natural water quality and an arbitrary maximum acceptable level for a particular contaminant. In this approach, assimilative capacity bears no relationship to the ability of the water body to purify itself, but is an arbitrary number -- an acceptable level of quality deterioration.

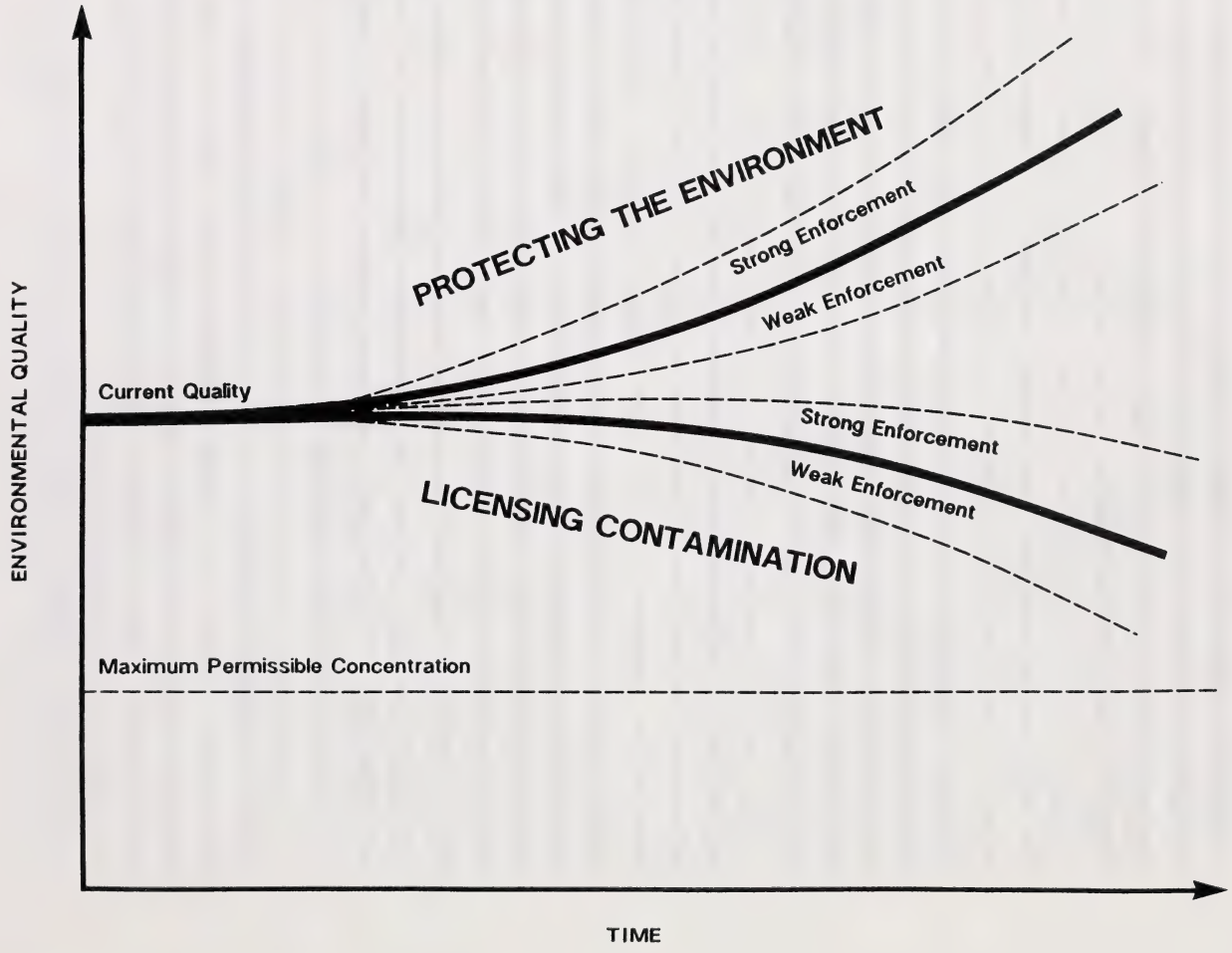
The long-term consequence of our present approach is to reduce all Alberta's water to a uniform level of lesser quality. Water should not be viewed as a resource that can be contaminated to some acceptable level. It should be viewed as a resource to be protected. Facilities should not be given a right to pollute, a licence to add further contamination. Instead, the Clean Water Act should be administered to control, reduce, or eliminate contamination of our water resources in order to maintain or improve the present quality.

Approaches to environmental standard setting and the influence of enforcement actions are illustrated in Figure 1. In the figure, "maximum permissible concentration" is the ambient objective and indicates a concentration of a substance in the environment that society has set as the minimum level of quality, the point at which it is not prepared to tolerate further deterioration. Theoretically, at the time that an activity would lead to exceedance of this concentration, the activity would be halted. The goal in managing environmental quality should be to prevent such a situation from ever arising. Indeed, the long-term goal should be to improve environmental quality through a reduction in emissions. Usually this is done through setting effluent or emission standards.

Emission standards establish the rate at which contaminants enter the environment. Hence, a lenient standard will result in more rapid deterioration of the environment in the direction of the maximum permissible concentration. A strict standard could prevent environmental deterioration or result in an improvement in quality.

Figure 1

Approaches to Setting Environmental Standards



Enforcement of the standards, or the lack of the same, affects the performance of a standard in influencing environmental quality. Weak enforcement of a standard means that the maximum permissible concentration is reached more rapidly than if the standard were strictly enforced.

Hence, emission standard setting and enforcement activities, to be most effective, must work together toward improving environmental quality. That is, they must work together to create and maintain positive slopes in the lines in Figure 1. Failure to maintain these positive slopes will result in a failure to protect or improve Alberta's environment.

AS A PREREQUISITE TO IMPROVED ENFORCEMENT, A CHANGE IN ATTITUDE TOWARD WATER QUALITY MANAGEMENT IS REQUIRED. IF THE MANAGEMENT OF WATER QUALITY WERE APPROACHED FROM THE POINT OF VIEW OF PROTECTING THE RESOURCE INSTEAD OF AUTHORIZING THE RELEASE OF CONTAMINANTS, THE ACT WOULD BE ADMINISTERED DIFFERENTLY AND ENFORCED VERY DIFFERENTLY. COMPLIANCE WOULD BE EXPECTED AND VIOLATIONS WOULD BE UNACCEPTABLE.

It is possible within the provisions of the Clean Water Act (and the Clean Air Act) to accommodate the changes that are necessary to implement a Departmental commitment to environmental protection. The following section discusses effluent standards and allowable variance as two possible tools to improve the effectiveness of the Act and to facilitate its enforcement.

EFFLUENT STANDARDS

The Clean Water Act authorizes the Minister to make regulations prescribing water contaminants and maximum permissible concentrations in effluent discharges (Section 2).

This is potentially an extremely powerful tool for protecting water quality, because the regulations can be made applicable to any substance(s), any source(s), and any location(s) and are directly enforceable under the Act. Effluent standards set by regulation might be used to place total bans on the release of some substances. Standards might be applicable to any source

or specific sources. They could be based on the application of best available technology.

Because effluent standards would apply to any source, with the expectation that every facility would comply with them, they would have to be set at the least stringent level necessary to protect the resource and achieve Alberta's objectives for water quality. (Stricter limits could be applied in licence conditions.) Nevertheless, effluent standards issued under the Act would be enforceable whether a facility were licensed or unlicensed. They could be enforced independent of company monitoring through periodic or spot sampling using appropriate methods. However, no regulations have been made and this potentially powerful tool is going to waste.

REGULATIONS SHOULD BE PASSED SETTING EFFLUENT STANDARDS AT LEVELS THAT ARE CONSIDERED NECESSARY FOR THE PROTECTION OF THE PROVINCE'S WATER QUALITY. ONE HUNDRED PERCENT COMPLIANCE SHOULD BE EXPECTED AND ANY EXCURSION SHOULD BE TREATED AS A VIOLATION REQUIRING LEGAL ENFORCEMENT ACTION.

One area in which implementation of the Clean Water Act is more lenient is in the manner of its application to municipal effluents as compared with industrial effluents. Although Recommended Standards for Water Supply and Sewerage,[5] comparable to guidelines for industrial effluents, have been prepared by Alberta Environment, many of the "recommended standards" are not enforceable because the word "shall" is not used in the Standards document.

Unlike the industrial effluent guidelines, in most cases the Recommended Standards document is not incorporated into a municipal licence. Instead monitoring is required for specified substances, usually only BOD and non-filterable residues. For example, there are no guidelines nor licensed requirements for metals in sewage effluents. The assumption in licensing and monitoring municipal effluents is that if the BOD and non-filterable residues are within the limits, the effluent quality is adequate. "Exotic"

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[5]Department of Environment. 1978. Recommended Standards for Water Supply and Sewerage.

chemicals in municipal sewage effluents are therefore only loosely controlled and the use of legal tools offered by the Clean Water Act would seem to be very difficult. The proposed effluent standards would apply to municipal effluents and would assist in controlling these sources.

Effluent standards provide a tool to control the effluent quality even if specific conditions were not attached to the licence. Effluent standards would help overcome another major gap -- the lack of effective controls over unlicensed sources, intentional releases, and one-time events. The use of effluent standards would shift the responsibility for controlling releases of unlicensed contaminants to the water facility.

LICENSING ALLOWABLE VARIANCE

The use of effluent standards will not negate the need for or the usefulness of terms and conditions specific to a facility's operating licence. Licences can be used to put in place effluent controls that are appropriate for the facility, the nature of its effluents, and, if desired, special conditions related to the facility's location and local environmental factors.

PLANT-SPECIFIC LICENCES WILL REMAIN AN INTEGRAL PART OF THE PROTECTION OF ENVIRONMENTAL QUALITY, BUT LICENCE CONDITIONS SHOULD REFLECT THE REALITY OF THE DEPARTMENT'S EXPECTATIONS FOR EMISSION CONTROL AND ITS INTENTION FOR ENFORCEMENT.

While it may be logical and, from a technological point of view, eminently practical to recognize that 100 percent compliance is not possible, and to include this as a consideration in enforcing the legislation, neither the terms and conditions of a licence nor the wording of the Act and its regulations acknowledge this. The result has been the creation of a credibility gap between Departmental actions and public perception about the enforcement of environmental standards.

The terms and conditions of a licence should anticipate both the expected variance in effluents under normal operating conditions and those effluents that are permissible in unusual circumstances.

ALLOWANCES SHOULD BE SPECIFIED IN THE LICENCE CONDITIONS FOR A VARIANCE AROUND PERMISSIBLE EFFLUENT LEVELS.

Allowable variances may include deviations from a numerical limit, or limits on the frequency of excursions, number of excursions, or length of excursion. The exact application of the concept will depend on the nature of the industry or the facility.

Licence conditions could be developed as they are now, based on an assessment of the technology with industry input. The main difference is that the licences would include normal operating conditions, acceptable variance during normal operating conditions, and absolute limits on releases during start up, shut down, repair, and maintenance. Because of industry input in developing licence conditions and the built-in accommodation for technological imperfections, the expectations for compliance should be 100 percent. Any violation of the licence conditions would automatically initiate enforcement action. For example, violations of the normal operating conditions might result in a directive requesting an explanation. Violation of the absolute limit would initiate prosecution.

THE CONCEPT OF LICENSED VARIANCE IS FORMAL RECOGNITION, IN ENFORCEABLE CONDITIONS, OF THE PRESENT APPROACH TO SETTING LICENCE CONDITIONS, RESPONDING TO EXCURSIONS, AND OBTAINING COMPLIANCE.

Including allowable variances within the licence conditions would remove some of the discretion in the application of enforcement procedures, and improve the credibility of enforcement procedures. The expectations of the Department would be clearly spelled out for both industry and the public. Everyone would know exactly what was expected. This is critical for the purpose of achieving credibility on all sides; expectations must match reality.

To accommodate in the licence condition the use of allowable variance to cover releases during repair and maintenance, provisions would have to be changed in Section 4 of the Clean Water Act, which exempts facilities from the need to obtain a permit, a licence, or an amendment to the existing licence during repair or maintenance. However, the operators of the water facilities should be required to notify the Department of their intent to undertake repairs or maintenance or other anticipated activities that might result in a release approaching the absolute limit permitted by the licence. Prior notification would allow inspection and perhaps other actions by the Department, such as issuance of a directive or a control order. It would also facilitate prosecution activities, if such became necessary, by having an inspector on the spot to collect evidence. Provisions within the Act allow the Minister to issue a Certificate of Variance if a facility could not maintain effluents within the expected limits and if it was desirable to permit a variance.

The Clean Water Act (General) Regulations could also be more explicit in stating that reporting of a release as required by the Regulations does not eliminate the possibility of prosecution under Section 17 of the Act: the prohibition re the deposit of a water contaminant.

ADMINISTRATIVE VERSUS LEGAL ENFORCEMENT

The present "hierarchical" approach to the use of the various enforcement tools is based on the Department's use of a technological approach toward pollution control and knowledge of the limitations of technological capabilities. The underlying assumption is that an excursion is due to a flaw in design or a failure in technology. If the excursion happens once, then it likely will happen again. Therefore, changes in processes and equipment, as required by the cooperation, directives, control order, etc., will overcome these weaknesses and prevent a recurrence. This approach accepts that licensed conditions will be violated occasionally and is at odds with the public's expectation that licensed conditions should always be met. It is also an unsatisfactory tool for dealing with one-time events.

Because much of the strength of the Act depends on companies obtaining permits or licences, the failure to do so should immediately be subject to enforcement through initiation of prosecution or issuance of a stop order. (If the Department published periodic lists of companies that have been granted permits and licences, the public might be able to help through notifying the Department of companies that are suspected of not having a permit or a licence.) Public participation in the review of licences would also help to make the public aware of changes in company operating conditions that, over the years, have reduced emission levels.

A basic concern arising from the review of the Clean Water Act was the degree to which the emphasis in the enforcement program has been placed on cooperation to achieve compliance. While the spirit of cooperation may be very appropriate when developing standards, guidelines, and licence conditions, it is not necessarily appropriate to the enforcement of the Act and its regulations once a facility has agreed to its operating conditions and its requirements regarding environmental protection. These two aspects require different approaches -- administrative versus legal.

Incorporating allowable variance as part of the licensed conditions and developing clear-cut criteria for the implementation of directives, control orders, and prosecution would do much to separate administrative responses from legal ones. The development of guidelines, regulations, and licence conditions, as well as the enforcement response to excursions that fall within the range of allowable variance under normal operating conditions, should remain as administrative functions. Enforcement of effluent standards, requirements for reporting accidental or unlicensed releases, and compliance with other licence conditions should be the responsibility of a specific enforcement group.

To encourage accountability in undertaking the enforcement responsibility, the Act or its regulations should include provisions similar to those in Section 63 of the Fisheries Act (Canada), which make it an offense for an inspector or any administrator of the Act to aid or abet in the violation of the Act or its regulations.

PUBLIC INVOLVEMENT

THE PUBLIC HAS A VALUABLE ROLE TO PLAY IN GUIDING WATER QUALITY MANAGERS AND GOVERNMENT WITH RESPECT TO THE VALUE JUDGEMENTS INHERENT IN ENVIRONMENTAL PROTECTION. THE PUBLIC SHOULD ASSIST IN THE DEVELOPMENT OF WATER QUALITY GOALS AND PROVINCIAL OBJECTIVES FOR WATER QUALITY AND BE INVOLVED IN THE PROCESS OF SETTING EFFLUENT STANDARDS.

Technical expertise in pollution control is no guide to a balance between resource development and environmental protection nor to value judgements concerning desirable goals for water quality management. Such judgements require policy based on a broad range of points of view.

The Department should draw more on the interest and concern of the public to give it the support to rigorously protect environmental quality. An initial step is to make the public, as well as industrial and municipal interests, more aware of the environmental protection activities of the Department. Improved communication with the public should lead to improved credibility for the Department.

THE DEPARTMENT SHOULD IMPROVE THE PUBLIC'S AWARENESS OF, INTEREST IN, INVOLVEMENT WITH, AND SUPPORT FOR ITS WATER MANAGEMENT ACTIVITIES BY PERIODICALLY PUBLISHING SUMMARIES OF INDUSTRIAL AND MUNICIPAL EFFLUENT RELEASES AND RATES OF COMPLIANCE, AND UPDATES ON ACTIONS TAKEN IN RESPONSE TO CONTROL ORDERS AND DIRECTIVES.

The public can also assist the Department through watching and reporting matters of environmental concern. Most water quality control orders issued for industrial activities were the result of either public vigilance or Departmental inspections. Few control orders result from the Department's review of routinely submitted monitoring data.(This could change with the incorporation of allowable variance into the licence conditions.)

THE PUBLIC SHOULD BE ACTIVELY ENCOURAGED TO NOTE AND REPORT ANY BEHAVIOR WHICH SEEMS CONTRARY TO THE EXPECTATIONS OF ENVIRONMENTAL PROTECTION.

The promulgation of effluent regulations and a public awareness campaign to inform the public of what constitutes unacceptable behavior would assist in making this program effective. (The Pollution Sub-Committee of the Public Advisory Committees to the Environment Council, in recent correspondence with the Minister, suggested an Environment Watch program, which encompasses these ideas.)

THE DEPARTMENT SHOULD ASSESS ITS FACILITY INSPECTION PROGRAM AND ITS PROGRAM FOR REVIEWING COMPANY REPORTS WITH THE AIM OF DETERMINING WHICH ASPECTS ARE THE MOST EFFECTIVE IN UNCOVERING EXCURSIONS AND LEADING TO IMPROVEMENTS IN WATER QUALITY MANAGEMENT.

This assessment should consider both industrial and municipal reporting.

A company or municipality could be held more publicly accountable for its behavior at the time it applies for renewal of its licence. The licence review procedures should include a formal opportunity for the public to express its concerns about the water facility's past operating record and the need for changes in operating conditions. The enhanced public awareness and involvement program suggested above would help make the public's participation in this review more meaningful.

SUMMARY

The Clean Air and Clean Water Acts have played an important role in protecting air and water quality in Alberta through their primary focus of licensing and regulating the release of contaminants by the application of best practicable or best available pollution control technology. This approach was suitable for bringing order and control to existing industries and municipalities and other pollution sources. Continuing use of this approach to protect our environment, however, will result in gradual deterioration in air and water quality. A different approach is needed to maintain the present level of environmental quality or provide the tools for its improvement.

The Clean Air and Clean Water Acts and their systems of licensing releases have the potential to be more effective. What is required is some solid base, some explicit long-term goal, that provides a continuing reminder to everyone involved in the process of why the work is being undertaken and where we, as Albertans, are heading with respect to the quality of Alberta's air and water. All Albertans should be invited to participate in developing these goals. Public involvement is important because these goals will represent the aspirations of Albertans for the quality of their environment. They are subjective decisions and a broad range of points of view should be sought.

The development of goals should be accompanied by a change in attitude away from "regulating the release of contaminants" toward "protecting the environment by minimizing pollution." This attitudinal shift can be accommodated with only minor changes to the Acts themselves. The major change required is in the policies governing the administration of these Acts.

Provisions within the Clean Air and Clean Water Acts for emission or effluent discharge regulations should be used to establish absolute limits on emissions for all sources. The terms and conditions attached to operating licences should reflect the concept of allowable variance to spell out explicitly the emissions permitted under a variety of operating conditions. The application of this concept may differ between the two Acts because of the differences in the nature of air and water resources and the facilities that produce and control air and water emissions.

If the Department's expectations for pollution control are clearly spelled out in emission standards and through the terms and conditions of facility licences, then excursions from these standards and licence conditions should be considered unacceptable. Immediate, strong enforcement action should be taken. If the various administrative aspects of environmental quality management were approached with this attitude, the enforcement of the Acts would be much more straightforward. Successful enforcement depends on expectations for compliance being clearly indicated and fairly enforced on licensed facilities.

Departmental credibility in environmental management also depends on the Department clearly expressing its intentions and then fulfilling them. The separation of administrative aspects of environmental management from the legal aspects is important to achieving this credibility. The establishment of an Environmental Enforcement Division is an important step along the way. Designated enforcement staff, trained and competent in law enforcement and with the legal responsibility to enforce the environmental legislation, would make enforcement more effective.

The Department should take other steps to gain public recognition and support for its environmental protection activities. For example, summaries of monitoring data and compliance reports, and updates on actions taken in response to control orders and directives, should be published periodically. Public involvement in observing and reporting environmental offenses should be encouraged and public comment should be sought when operating licences are considered for renewal.